Iris™
Video Quality Monitoring
and Analytics

RELEASE 2.0.5

Installation and Getting Started Guide
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In addition to these symbols, this guide may use the following text conventions:

<table>
<thead>
<tr>
<th>Convention</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typed Command</td>
<td>Indicates the text that you type in at the keyboard prompt.</td>
</tr>
<tr>
<td><code>&lt;Ctrl&gt;</code>, <code>&lt;Ctrl&gt;+&lt;Shift&gt;</code></td>
<td>A key or key sequence to press.</td>
</tr>
<tr>
<td><strong>Links</strong></td>
<td>The <em>italics in blue</em> text to indicate Cross-references, and hyperlinked cross-references in online documents.</td>
</tr>
<tr>
<td><strong>Bold</strong></td>
<td>Indicates a button to click, or a menu item to select.</td>
</tr>
<tr>
<td><strong>ScreenOutput</strong></td>
<td>The text that is displayed on a computer screen.</td>
</tr>
<tr>
<td><strong>Emphasis</strong></td>
<td>The <em>italics</em> text used for emphasis and document references.</td>
</tr>
</tbody>
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This manual provides an overview of the Iris platform, and the role it plays in the delivery of high quality broadcast services. It describes the GUI used to configure and access Iris.

This manual also describes the end-to-end configuration of an Iris system. In the following chapters, you will learn how to install the Iris software, prepare encoders to transmit their Video Quality data metrics, prepare the Iris server for monitoring tasks, and survey some of the Iris features that will help you to improve your video delivery system performance. This guide is organized as follows:

- **Chapter 1, Preface** (this chapter), gives an overview of Iris features. The detail information about the features are documented in the online help.
- **Chapter 2, Installation**, describes the Iris platform requirements, and tells how to install the application software.
- **Chapter 3, Preparing the Encoders to Send QoS Data**, gives instructions for enabling encoders to send out QoS data for the programs they deliver. Instructions for encoders provisioned by NMX and for standalone encoders are included.
- **Chapter 4, Setting Up the Iris Server**, tells how to customize the server settings in preparation for monitoring tasks, including starting the server.
- **Chapter 5, Loading Channel Data**, shows how to initiate communication between Iris and the encoders sending QoS data, so Iris can load the channel and pool configurations.
- **Chapter 6, Monitoring Performance**, walks through some typical monitoring tasks, including setting channel groups, monitoring channel groups and individual channel performance, creating reports, and monitoring events.
- **Appendix B, Access Privileges**, shows which features are accessible under the two user account types.

**Iris Features**

Iris is a Video Quality monitoring and analytic software suite that provides audio/video quality and source profiling information. It is designed to help video service providers increase the quality of service (QoS), reliability, and availability of their broadcast services. The information provided by Iris allows service providers to:

- Maximize video and audio quality for their entire program lineup, offering end users a better viewing experience.
- Optimize bandwidth utilization by more effectively balancing the distribution of channels across their statistical multiplexes.
System Overview

Iris delivers a variety of real-time measurements and reports for hundreds of programs. Iris can be used with Harmonic’s Ion™, Ion AVC™, and Electra® series encoders. It can interface with Harmonic’s NMX Digital Service Manager™, or with standalone encoders, to provide a cost-effective and centrally managed solution for QoS monitoring.

Figure 1–1: Iris System Diagram

Iris receives video and audio performance data from encoders over the video network and stores the data in a database. It can monitor channels that are provisioned by NMX, or the standalone GUI of encoders.

For the purposes of this documentation, QoS stream, and QoS data refer to the quality metrics being sent to Iris for a given video or audio stream. An Iris channel contains one video QoS stream and up to four audio QoS streams. When referring to a video or audio stream in Iris, we are referring to the QoS data streams, not the actual video and audio content.

QoS Data Management

Encoders report video and audio quality information to Iris in one second increments. Iris aggregates the data and stores it as records in its database. These records retain minimum, maximum, and average values for the aggregated QoS data.

The one second data increments are stored for 24 hours. Then, as the data ages, it becomes part of a statistical average for one minute sample increments, then for 60 minute sample increments.
The data is collected and stored over time as follows:

<table>
<thead>
<tr>
<th>Age of Data</th>
<th>Storage Increments</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 24 hours</td>
<td>Real-time data in 1 second sample increments</td>
</tr>
<tr>
<td>1 minute to 30 days</td>
<td>Statistical data in one minute sample increments</td>
</tr>
<tr>
<td>1 hour to 1 year</td>
<td>Historical data in one hour sample increments</td>
</tr>
</tbody>
</table>

One minute sample increments are discarded after thirty days. Sixty minute samples are discarded after one year.

The performance data is managed by Iris to provide the following analysis options:

- Monitoring of real-time metrics for channels/pools in dynamic charts.
- Display of historical and statistical QoS metrics for various channels/pools within a given sample duration.
- Comparison of metrics for a particular QoS parameter between different channels/pools along with data filtering options.
- Pool configuration tracking that stores a history of pool channel membership, for comparison of different pool configurations.
- Grouping performance data for two or more channels, showing the overall performance against the group’s target performance threshold.
- Performance evaluation for a pre-defined time-slot, the Prime Time Window.
- Status reporting using four types of reports:
  - Top/Bottom Channels
  - Top/Bottom Pools
  - Channel Detail Report
  - Pool Detail Report
    These reports can be scheduled to print on-demand or recurring with user defined criteria. You can save in multiple formats including PDF, CSV, print, or view in HTML.

**Iris GUI**

The Iris server is configured and managed through an easy-to-use web GUI, that provides state-of-the-art graphical visualization of your video delivery lineup performance.

For instructions on starting the GUI, see *Starting the Iris User Interface.*
Chapter 2
Installation

This chapter describes the initial installation of the Iris server and software. It has the following sections:

- **Platform Overview**
- **Installing the Iris Application Software**
- **Starting the Iris User Interface**

**Platform Overview**

Harmonic ships the Iris server unit pre-configured to run Iris.

**Hardware**

The Iris server is a 1RU chassis, with 4 GbE ports. Up to 2 GbE ports can be used to receive QoS data, 1 GbE port is for management. It comes pre-configured with the following:

- MS Windows® 2008 Server 64-bit
- MS SQL Server® 2008 Standard Edition
- RAID 5 controller for redundancy
- Dell R620 Platform that includes the NMX 6.6 or Later Recovery Image.
- If Dell R610 is used, the NMX 6.6 or Later Recovery Image should be installed. Refer to **NMX 6.6 or Later Installation Guide** for details.

**Rear Panel Cable Connections**

The Iris server needs one IP connection for management tasks, and at least one IP connection for QoS data input—you can configure up to two network interfaces to receive QoS data.

---

**NOTE:** Iris subscribes to the same multicast or unicast address on both data network interface cards (NICs). To prevent duplication of incoming QoS data (the same channel's QoS data entering Iris on more than one NIC), the NICs should be receiving data from isolated switches, never from multiple ports on the same switch.

The customary setup is:

- Management network: ethernet interface #1 — connects with NMX and clients running the Iris GUI via the management network.
- Video network: ethernet interface #2 (and #3) — connects to the encoders to receive the QoS data.

**Software**

Your Harmonic representative will give you instructions on downloading the Iris software from the Harmonic web site.

The Iris user interface runs in a web browser. The following software is required for the GUI:

- Google Chrome™ browser running on Windows 32-bit or 64-bit.
Installing the Iris Application Software

Follow these steps to install the software:

1. Download the Iris software as directed by your Harmonic representative, and follow any instructions that come with the download.

2. Launch Setup.exe.
Follow the prompts to install the Iris application software. You will be prompted to choose a directory in which to install.

3. Use the shortcut link created on your desktop to launch the application.

**Starting Iris After Using the Recover CD**

During the first time install after using the Recover CD, Iris cannot be automatically started. To solve this issue, you need to manually start the Harmonic Iris System Manager. Follow these steps:
1. Start the Windows Services. **Windows Start Key > Run > type** in `services.msc`.
2. Locate the Harmonic Iris System Manager.
3. Right-click and select **Start**.
4. Close the Services window.
5. Launch the Chrome browser with the Iris IP address. For more instructions see *Starting the Iris User Interface*.

**Starting the Iris User Interface**

**TIP:** For satisfactory viewing, a minimum screen resolution of 1024x768 and 96 DPI is required. For even better viewing results, Harmonic highly recommends any higher resolution.

To start the GUI:
1. Start the application by launching the shortcut link.

**NOTE:** The launcher opens the Iris website in Chrome, if Chrome is installed on your local computer. Otherwise, it will open in Internet Explorer® with the message "Iris is best viewed with Google Chrome." If those two browsers are not installed, a message box indicates "Install Google Chrome to start using Iris."

2. If you are not using the shortcut link, enter the IP of the Iris server’s management network interface, followed by `/iris` in the URL bar. For example, the IP of the Iris management interface.
3. The User Login screen appears. Enter the following default user account values:
   - **User Name:** administrator
   - **Password:** admin
To learn more about user accounts, see *Creating User Accounts*. The Iris Home page appears, as shown in *Figure 2–1*.

![Home Page for a new server](image)

*Figure 2–1: Home Page for a new server*

The Home page serves as a dashboard that displays a quick overview of Iris system health, and the top and bottom QoS performers.

The Iris GUI menu bar is always visible. Use it to move from page to page.

![Menu Bar](image)

*Figure 2–2: Menu Bar*

When you have successfully installed the Iris software and started the GUI, you are ready to begin configuring the settings. First, make sure that the encoders you want to monitor are prepared to send out QoS data, as described in *Chapter 3, Preparing the Encoders to Send QoS Data*. Then, proceed to *Chapter 4, Setting Up the Iris Server*. 
Once your Iris software is installed, you are ready to set up monitoring data streams from the encoders. This chapter tells how to prepare the encoders to send out QoS data for the channels they deliver. If you have already made these settings, you may skip this chapter and go on to Chapter 4, Setting Up the Iris Server.

This chapter includes the following sections:

- **Overview**
- **Setting Up Encoders Managed by NMX**
- **Setting Up Standalone Encoders**

### Overview

Iris needs two types of data to perform its monitoring tasks:

- **Management data**—Iris reads the channel and pool configurations on encoders from their device management systems. The management system interfaces used by Harmonic encoders are NMX, and the standalone GUI.

- **QoS data**—Iris receives QoS data directly from the encoders provisioning the streams. This data is compiled and maintained in the Iris database to create a picture of your video delivery performance.

To access the encoders and retrieve this data, you must first prepare the encoders to send QoS data. This requires setting up management and QoS data communication between the encoder and Iris. Iris can monitor streams from multiple systems. The following communication set up is necessary on each type of device management interface:

**On NMX:**
- Designate a unicast or multicast IP address on which encoders will send data to Iris.
- Enable sending QoS data for each channel (in Iris one channel consists of one video stream and up to four audio streams).

  Make these settings in the NMX GUI, as described in *Setting Up Encoders Managed by NMX*.

**On standalone encoders using the web GUI**
- Designate a unicast or multicast IP address on which to send QoS data to Iris.
- Enable sending QoS data for each program (in Iris each program is called a channel, and consists of one video stream and up to four audio streams).

  Make these settings in the web GUI, as described in *Setting Up Standalone Encoders*.

The following sections describe how to perform these tasks. In later chapters you will set up Iris to load the channel and pool configuration information from these device managers, and to listen for QoS data.

### Setting Up Encoders Managed by NMX

Follow the steps outlined in this section to set up the transmission of QoS data for programs/channels that are provisioned by encoders under NMX management. The following screens show both NMX 5.x.x and the new NMX 6.x.x GUI.
Setting the NMX QoS Destination IP Address

To set the output IP address, follow these steps on the NMX server:

1. Navigate to the **Options > General** tab.
2. In the **Iris Destination** field, enter the data unicast or multicast IP to be used for QoS data output on all the encoders managed by this NMX. (The port number will be fixed, between 6500 to 6503, depending on the encoders).
   - For unicast, use the same address that you designate as the data interface address on the Iris server (see [Setting Network Addresses and Protocol](#)).
   - For multicast, Harmonic strongly recommends that the entire multicast IP should be reserved exclusively for Iris and not be used by any other system.

![Figure 3–1: NMX 6.x.x Options > General Tab](image-url)
3. Click OK.

Next, enable reporting from each channel or program (decoding and encoding) that you want Iris to monitor.

Enabling NMX Channels/Programs to Send Qos Data

To enable a channel/program to send its QoS data out, follow these steps on the NMX server:

1. Right-click the service configuration and select **Edit Service Configuration**.
2. Navigate to the **Channel Input Properties > General**, or the **Program Input Properties > General**, for each channel or program that you want Iris to monitor.

![Image of NMX 6.x.x Channel/Program Properties]

**Figure 3–3: NMX 6.x.x Channel/Program Properties**
4. Click OK.
5. Repeat steps 1 through 4 for each channel you want Iris to monitor.

If you are enabling Iris Reports for multiple channels, it may be easier to use NMX’s spreadsheet view:
1. Right-click the service configuration and select Edit Service Configuration.
2. Click the Spreadsheet button in the lower right corner.
3. Select Service View from the first picklist, and Input Channel or Input Program from the second picklist.
4. Scroll to see the column heading for Iris Report.
5. Enable Iris Report for each channel or program desired.

When you have finished setting the unicast or multicast IP for QoS data output on the NMX, and enabling all the channels that you want to Iris to monitor, return to the Iris server.
Setting Up Standalone Encoders

Follow the steps outlined in this section to set up the transmission of QoS data for programs that are provisioned by standalone encoders.

Setting the Standalone Encoder QoS IP Address

To set the output IP address, follow these steps in the web GUI:

1. Navigate to the Platform Configuration page > Network tab, as shown in Figure 3–7. In the Preferences > Iris IP Address field, enter the unicast or multicast IP address to be used for data output for any stream on the encoder:
   - For unicast, use the same address that you designate as the data interface address on the Iris server (see Setting Network Addresses and Protocol).
   - For multicast, Harmonic strongly recommends that the entire multicast IP should be reserved exclusively for Iris and not be used by any other system.

2. Click Apply. The QoS data output address is set up for this encoder.

Next, you must go to each program you want to monitor, and enable the encoder to send out QoS data for the streams in that program.

Enabling Standalone Encoder Streams to Send QoS Data

To enable sending QoS data for streams in a program, follow these steps in web GUI:
1. Navigate to the stream’s Program Configuration page > General tab, as shown in Figure 3–8. Click the Iris > Enable check box.

![Figure 3–8: Standalone encoder Iris enable for program](image)

2. Click Apply. The encoder is ready to send QoS data for this program.

Repeat these steps for each program on the encoder that you want Iris to monitor. Iris loads the QoS data for one video stream and up to four audio streams per program. If more than four audio streams are in a program, Iris loads the first four, in alphabetical order by stream name.

In Iris, this data is loaded as one entry into its Channels database.

When you have finished setting the IP for QoS data output on the encoder, and enabling all the programs/channels that you want to Iris to monitor, return to the Iris server.
Before you start monitoring QoS data, you need to set up the Iris server to perform its monitoring tasks. This chapter leads you through the basic settings you need to get started. It includes the following sections:

- **Creating User Accounts**—For security purposes, it is recommended to set up basic user accounts.
- **Setting Network Addresses and Protocol**—Set a management address, and up to two data interfaces for receiving QoS data. Tell Iris which IGMP version the network uses.
- **Setting the Auto NMX Sync Interval**—Initiate a sync event to update channel and pool configurations.
- **Backing Up and Restoring the Database**—During backup the catalog is compressed, and restore will restore the data from the compressed catalog.
- **Setting Event Thresholds**—In order for monitoring to be meaningful, you need to set some thresholds for QoS levels, and determine how you want to be notified about events on your system.
- **Setting the Prime Time Window**—Define a time-slot of particular interest.
- **Email Alert for Scheduled Reports**—Get email notifications when reports are ready.
- **Forwarding SNMP Trap Events**—Send notifications for any or all events as SNMP traps to one or more trap receivers.
- **Starting the Server**—Start or stop the server to monitor the QoS data.

Except for the Email Alerts, you make all these settings from the Options Menu:

![Options Menu](image)

### Creating User Accounts

Iris uses user accounts to control access to some settings and features. Upon installation, Iris provides one default Administrator account that has full privileges. You can perform all of the tasks in this chapter using the default account.

Only the default Administrator account with complete permissions is included. See [Access Privileges](#) for access levels necessary for each feature. Users can proceed with the rest of the set up tasks using the default Administrator account.

![User Accounts](image)
3. Select Add New User and fill in the values for the new user account.
   
   The defaults for the Administrator account are:
   
   Login Name: administrator
   Password: admin
   
4. Click Save.
5. Repeat these steps to create as many user accounts as desired. Refer to online help to view the user access privileges table.

Setting Network Addresses and Protocol

The Iris server has three network interface cards (NIC):

- One management interface.
- Up to two data interfaces for QoS data.

Iris supports both IGMPv2 and IGMPv3:

- Under IGMPv2, Iris can monitor encoders under NMX management and standalone encoders.
- Iris servers running under IGMPv3 can only communicate with encoders via NMX — there is no support for standalone encoders. For more details, see Iris GUI.

You configure the network interface addresses and the IGMP version in the Management Settings page. This page has tabs for input/output configuration on the left, and system settings in a panel on the right:

![Figure 4–3: Management Settings Page](image)

To set the Network Interface Addresses:

1. Navigate to the Options > Management Settings page.
2. Stop the server, if necessary. The server must be stopped to edit/change the server settings.
3. Click **Edit** to access the fields:

![Server Status and Server Settings](image)

- **Management Network Interface.** The host IP address for this Iris server. This interface is used for control communication, and by the Iris web client.
- **Data Network Interface.** The network interface on which to receive QoS data.
- **Data Network Interface.** A second network interface (if available) on which to receive QoS data. Leave as **Not Set** if you don’t use a second interface for data.

**NOTE:** Iris subscribes to the same multicast or unicast address on both data NICs. To prevent duplication of incoming QoS data (the same channel’s QoS data entering Iris on more than one NIC), the NICs should be receiving data from isolated switches, never from multiple ports on the same switch.

- **IGMP Version.** The IGMP version running on the site network. Iris features are fully supported under IGMPv2, however running under IGMPv3 only allows monitoring encoders managed by NMX — no standalone encoder monitoring is possible. Consult your site IT department to verify the IGMP version for this installation.

  If you use IGMPv3, Harmonic highly recommends setting the Auto NMX Sync Interval feature to trigger sync events at regular time intervals, as described in **Setting the Auto NMX Sync Interval**.

  To learn more about running under IGMPv3, see **IGMP Version Support**.

**TIP:** Cisco® switches may use a reserved set of addresses that default to IGMPv3, so if your system is using defaults, it may be using IGMPv3. Consult the site IT department for site-specific network configuration information.

4. Click **Save** to commit your changes.

### Backing Up and Restoring the Database

The server must be stopped to edit or change the Database Tasks options.

During backup the catalog is compressed, and restore will restore the data from the compressed catalog.

You can backup to a Local or Remote location.

**Backup.** Create a backup file of the data that has been collected by Iris. You can specify the catalog name and create multiple backups without overwriting the files. The backup file contains all device configuration and QoS data. Daily backups are recommended.
Setting the Auto NMX Sync Interval

If you are using Iris to monitor QoS data from encoders under NMX management, you can initiate a sync event to update channel and pool configurations manually, or you can trigger an automatic sync event to collect channel and pool configurations at regular time intervals, by setting the Auto NMX Sync Interval. For more information about sync events, see Loading channels from NMX, and the Iris online help.

In addition to its convenience, the Auto NMX Sync Interval provides a safety-net for data collection when running under IGMPv3. When redundant encoders take over in a failure, IGMPv3 does not permit data from the redundant device to reach Iris. Iris must initiate a new sync event to begin receiving QoS data from the redundant device. If you have established a regularly scheduled sync interval, you ensure that the maximum gap in QoS data from a failed encoder is no greater than the time interval between sync events. In other words, the maximum gap in QoS data from a failed encoder is equal to the Auto NMX Sync Interval.

For more details about IGMP version support with Iris, see IGMP Version Support.

To configure the Auto NMX Sync Interval:

1. Navigate to the Options > Management Settings page.
2. Select the **NX** tab. The Auto NX Sync Interval control is at the bottom of the page:

![Auto NX Sync Interval](image)

**Figure 4–4: Setting Up the Auto NX Sync Interval**

3. Select a time interval from 15 to 60 minutes.
4. Click **Save**. Iris will attempt to sync with each NX in the list every $n$ minutes. In this example, Iris is configured to sync with five NX servers.

### Setting Event Thresholds

Iris raises an event alert notification for system conditions that need attention, and for individual channels when QoS conditions meet user-defined threshold settings. Setting Event Thresholds allows you to:

- Customize the performance information you see on the Iris screens and reports
- Trigger notification of QoS levels and of physical states on your system

You can set thresholds that are very sensitive to certain QoS conditions, while leaving a wide margin of performance fluctuation in others. You can make sure that you are notified when the server hard disk is getting full.

You can change Event Thresholds at any time—you do not need to stop the server to change Event Thresholds.
To configure Event Thresholds:

1. Navigate to the Options > Management Settings page. The Event Thresholds section is in the right-hand panel. Use the arrows to scroll to the desired threshold value for each of the settings.

![Event Thresholds](image)

Figure 4–5: Event Threshold

The choices are:

**Noise Level.** The amount of noise in the video when it arrived at the encoder. The higher the number, the noisier the video. The range is 1 to 100. The default is 80.

**Black video.** Percentage of black video frames (typically caused by no video input source to the encoder). The default is 50%.

**Frozen non-black video.** Percentage of frozen video. The default is 50%.

**Invalid video.** Percentage of invalid video frames. Iris uses the number of invalid video frames reported by the encoder to determine the Channel Availability. The default is 10%.

**Disk Usage.** Percentage of server hard disk space that is occupied. The default is 80%.

**VQAD.** The average degradation of video quality. The range is 0 to 5, where 0 is imperceptible degradation. The default is 4.

**Audio Availability.** Percentage of time (seconds) that audio is available. Iris unidentified an audio frame as available if it is not down (down time includes silence, corrupted audio frame, and loss of audio ES). For example, if the audio stream experienced 5 seconds of downtime during a one minute interval, the Audio Availability for that minute would be 92%. The default is 80%.

**Show Threshold on Chart.** Click the check box to show the threshold for noise and VQAD in a horizontal red line on the chart.

For a more detailed description of these terms, see the Glossary in the Iris online help.

2. Click **Save**.

3. To view any events that are triggered by these threshold settings:
   - Go to the Events page, and filter the Events table to view the type of events you're interested in.
   - Critical events are always shown on the Home page.
Setting the Prime Time Window

Iris compiles statistics for time periods spanning from one minute to one year. A prime time window is a user-defined time slot, (usually a heavy traffic time period) that you want to monitor on an on-going basis. Iris will compile QoS performance averages for this time slot every day.

You can choose the Last Prime Time as the data period for charting performance in the Overview pages and the Home pages.

NOTE: Prime Time Window settings are loaded when the server is started. To change the settings, you must stop and restart the server, as described in Starting the Server.

To define the Prime Time Window:
1. Go to Options > Management Settings > Prime Time Window.

   **Prime Time Window**
   - Start Time: 8:00 PM
   - End Time: 10:00 PM
   
   ![Figure 4–6: Define the Prime Time](image)

   2. Enter the Start Time and End Time. The default is 8:00 PM to 10:00 PM local time. The maximum interval is four hours.

   3. Click Save.

Email Alert for Scheduled Reports

It’s a good idea to set up an email notification for any scheduled reports that you generate.

NOTE: The email settings are global, apply to all reports, there is no ability attach particular email to a particular type of report.

To configure Email Alert Settings:
1. Navigate to the Options > Management Settings page.

   ![Figure 4–7: Report Email Alert Settings](image)

   2. Enter the:
Forwarding SNMP Trap Events

You can configure one or more trap receivers, the SNMP version for each receiver, and the events to forward to each receiver. You can select QoS events and system events for forwarding.

Adding SNMP trap receivers:
1. Navigate to the Options > Management Settings > Forward Events tab.

2. Click the Add IP icon located at the bottom of the tab. Entry fields appear.
3. Enter the IP address of the trap receiver, and select the SNMP version supported by the receiver. Check the individual events in the event list that you want to send to this trap receiver, or check the box in the header to select all events. The events list applies to all trap receivers.

4. Click the green check mark next to the entry fields, to add the new SNMP trap entry to the table. Click the red X to cancel the addition. Adding IP address entries to the table does not start forwarding events. You must save the table to start event forwarding.

5. Add more SNMP trap address entries to the table, as desired.

6. Click Save. Iris starts forwarding events to all SNMP trap receivers in the table. Click Cancel to clear any entries that have been added, but not saved.

Designating events to send:
1. Select entries in the Event list, as desired.
2. Click Save. The events that are checked in the list will be sent to all the trap receivers in the table.

Starting the Server

To monitor QoS data, the server status must be running. To start the server:

1. Navigate to the Options > Management Settings page.
2. In the Server Status section, click the Start button.

The status changes from Stopped to Running. Monitoring for the enabled channels begins. The server status is also shown on the Home page.
Chapter 5
Loading Channel Data

Your Iris server set up is customized and you are ready to start monitoring QoS data streams from the encoders. This chapter leads you through the steps to load channel configurations from NMX, and from standalone encoders. It shows you how to verify that Iris is receiving QoS data for those channels. It includes the following sections:

- **Overview**
- **Loading channels from NMX**
- **Loading channels from Standalone Encoders**
- **Verifying the Connections**
- **Licensing**

### Overview

In *Chapter 3, Preparing the Encoders to Send QoS Data*, you set up the encoders to send out QoS data for the channels they provision. You set that up on NMX or on the standalone encoders via web GUI, or both.

In *Chapter 4, Setting Up the Iris Server*, you set the network interfaces on the server to receive QoS data.

Now you are ready to start listening for the QoS data. Iris loads the channel and pool configurations into its database, creating a record of each channel it is going to monitor. It then collects QoS data for those channels, as long as they are *enabled* in the Iris database.

There are two ways to have Iris load channel and pool configuration information:

- **Sync with NMX** by entering the management IP address of the NMX in the **NMX** tab.
  
  All of the channel and pool information for streams that the NMX is currently provisioning will automatically be available to Iris. For NMX servers, this includes all the encoders managed by that NMX.

- **Auto discover** a range of IP addresses that are transmitting QoS data in the **Auto Discover** tab.
  
  All of the channel and pool information for streams that the encoders are currently provisioning will automatically be available to Iris. You can add up to five multicast addresses in one entry.

All streams loaded into the Iris database in this manner are enabled for monitoring automatically, on a first-in basis. Iris begins listening for, and loading, QoS data for channels as soon as they are enabled. You can change which channels are enabled for monitoring, if necessary.

**NOTE:** Iris only adds channel and pool configurations for streams that have been enabled to send QoS data, as described in *Preparing the Encoders to Send QoS Data*.

The following sections describe how to load channel data information.

### Loading channels from NMX

You must start the server to perform sync operations, as described in *Starting the Server*. 
**NOTE:** Iris can show individual channel data in real time, or as aggregated data. Pool data is always calculated by Iris.

To sync with an NMX to get channel and pool configuration information:

You can enter one or more NMX server addresses, to retrieve all the configurations for the NMX servers they manage. From the Iris GUI:

1. Navigate to the **Options > Management Settings** page.
2. Select the **NMX** tab:

![Figure 5–1: Loading Channels from NMX](image)

3. Click the **Add New NMX** button located at the bottom of the tab.
4. An entry field appears at the top of the tab.

![Figure 5–2: Adding New NMX](image)

5. Enter the IP address of the NMX management interface:
   - If it is an NMX server, enter the NMX IP address.
6. Click **Insert**.

You can repeat steps 5–1 through 6 to add as many NMX devices as desired. Iris will not attempt to connect to these devices until you try to **sync** with them.

**NOTE:** Synchronization between Iris and NMX requires a compatible version of NMX. See your release notes for specific version compatibility information, or contact Harmonic Customer Support.
7. When you have added an NMX server, you sync it with Iris. This retrieves the channel and pool configurations for the devices managed by that NMX.

Select the sync icon next to the NMX entry.

Iris attempts to connect to the NMX and retrieve configuration data.

The **Sync Status** column shows that the sync was successful. The **Last Sync** column shows the date and time of the last sync.

<table>
<thead>
<tr>
<th>NMX IP</th>
<th>Sync Status</th>
<th>Last Sync</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.21.35.10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Figure 5–3: Sync Success**

Each time you sync, the information in the Iris database is updated. In this way, as you change configurations on the NMX, you can update the information in Iris. Iris will not add duplicates if the channels are already present, but will update device and channel configurations.

8. To see a listing of the channels that were discovered, and any changes from previous sync events, click the **Sync Log** link. This link takes you to the Events page, and loads the sync event details for that IP address or range. Sync events are Information Events and you can view them in the Events page at any time.

Iris will only recognize programs/channels that have been enabled to send QoS data, as described in **Preparing the Encoders to Send QoS Data**. Iris adds all discovered devices to the Devices table, all the programs/channels to the Channels table, and all pools to the Pools table. The channels are enabled automatically for monitoring.

**NOTE:** Iris can ingest information for up to 250 channels.

### Loading channels from Standalone Encoders

You must start the server to perform discovery operations, as described in **Starting the Server**.

Enter a range of IP addresses that include standalone encoders transmitting QoS data. Iris retrieves the channel and pool configurations from the encoder, and adds them to its database.

**To auto-discover encoder channel and pool configuration information:**

1. Navigate to the **Options > Management Settings** page.
2. Select the **Auto Discover** tab.

   ![Auto Discover Tab](image1)

   **Figure 5–4: Auto Discover Tab**

3. Iris can listen for unicast broadcasts to one or both of its network interface cards, or for a range of multicast IP addresses. First, you add the addresses to the Auto Discover table:

   For a unicast address:
   - Click the **Add Unicast** button. An entry for unicast discovery is added to the Auto Discover table. The **Add Unicast** button is greyed, because this option is now in use.

   ![Add Unicast](image2)

   **Figure 5–5: Add Unicast**

   For a range of multicast addresses:
   - Click the **Add New Multicast IP Range** button. Entry fields appear at the top of the tab. Enter the starting IP address in the **From IP** entry field, and the ending IP address in the **To IP** entry field.

   ![Discover IP Range](image3)

   **Figure 5–6: Discover IP Range**
The **From IP** and **To IP** values can only differ by the last byte, so the **To IP** field is auto-populated with the first digits for you. Auto-discovery is limited to 5 multicast IP addresses in a given IP address range.

- Click the green checkmark to add this IP range to the Auto Discover table. Iris returns an error if the address is not recognized as a valid multicast IP.

![Figure 5–7: Add IP Range](image)

4. To execute auto discovery on one of the entries in the Auto Discover table, click the discover icon.

Iris executes auto-discovery for the data network interface IP addresses. If you have two data network interfaces configured on the server, Iris listens for broadcasts on both of them.

The time-out for discovery is five minutes, after which the server discontinues the discovery query and returns to normal operation.

To stop the discovery click the Stop Discovery icon on the right side.

The **Status** column is updated to show the result of the discovery, including the number of channels discovered. The **Last Discovery** column shows the date and time of discovery.

![Figure 5–8: Auto Discovery](image)

5. To see a listing of the channels that were discovered, click the **Discovery Log** link. This link takes you to the Events page, and loads the discovery event details for that IP address or range. Discovery events are Information Events and you can view them in the Events page at any time.

Iris will only recognize programs/channels that have been enabled to send QoS data, as described in *Preparing the Encoders to Send QoS Data*. Iris adds all discovered devices to the Devices table, all the programs/channels to the Channels table, and all pools to the Pools table. The channels are enabled automatically for monitoring.

**NOTE:** Iris can ingest information for up to 250 channels.
The discovered devices are added to the Devices table, and the discovered program streams are added to the Channels table.

6. Repeat these steps to add as many IP ranges as you desire.

7. To repeat a discovery query on any IP range in the table, click the discover icon. Iris retrieves any device information for the range, and validates any discovered streams against the streams that are already in the database. It will not add duplicates if the streams are already present, but will update device and channel configurations.

Verifying the Connections

When you have loaded the channel information, you can verify that the QoS data is coming into Iris as follows:

1. Navigate to the Monitoring > Realtime Channel View page.
2. Select a channel or channels to view.
3. Select Bit rate.
4. If connections are working, you should see some activity in the graph showing that the bit rate data for the selected channel is being plotted in real time, as shown in Figure 5–9.

**Figure 5–9: Real-Time bit rate for 2 channels**

**TIP:** If no Divitrack is running, the bit rate will remain constant, so you’ll see a straight line. Check spatial activity or temporal activity if you want further verification.

Licensing

Iris interfaces with the License Manager 4.0 tool to report the licensing status.
To view the Licenses status select **Options > Management Settings > Licensing** tab.

This tab lists the current status of the licenses.

The **Installed** column shows the number of licenses allotted to Iris and the **Used** column shows whether they are being used by Iris.

The **expiry** column is only applicable to temporary licenses, and it is marked N/A for permanent licenses.

The following are the license types that you can view in Iris:

- **SW-IRIS-LIC-BASE-2.X.** One per server license controls access to the application. If the BASE license is missing you cannot login to the application. An error message displays at the login page.

- **SW-IRIS-LIC-CHN-1.** Up to 250 licenses per server control the ability to collect metrics. You can add as many channels as needed, however, data collection on active channels will only be allowed for up to the number of licensed channels.

- **SW-IRIS-LIC-TEMP.** One per server license allows full functionality for any number of channels for a temporary 90 days period. A temporary license is invoked when a BASE or CHN license is expired. A message displays how many days remain until the licenses expire each time you login to the application.

- **GracePeriod.** The system has a grace period of 90 days allowing full functionality similar to SW-IRIS-LIC-TEMP as the default state when installed for the first time. If BASE license is available, and there is no channel license available, the Grace period license will not be used.

**NOTE:** You can query and generate reports on all channels that contain historical data in the system, as long as there is a BASE, Grace period, or TEMP license.

**Licensing Alarms**

The alarms display in the **Monitoring > Events** page. Only critical alarms display on the dashboard page. In the Events page, search for the word License in the Type column and the table shows related rows.
Chapter 6
Monitoring Performance

Your Iris server is set up and is ingesting QoS data from encoders. You have set performance thresholds and notification parameters. You are ready to start monitoring performance.

This chapter shows some of the typical monitoring tasks you can perform with Iris. It includes the following sections:

- Choosing Which Channels To Monitor
- Creating Channel Groups
- Monitoring a Channel Group
- Creating Reports
- Monitoring Events
- Creating Backups

Figure 6–1 shows the Home page for a live server that is monitoring QoS performance data.

![Figure 6–1: Home Page for a live server](image)

Each page of the Iris GUI has online help to guide you through the settings and options for that page.
Choosing Which Channels To Monitor

Iris can store configurations for up to 250 channels. The only channels that will be monitored are those that are enabled in the Channels tab. Channels are enabled by default as they are added to the Iris database.

For example, if Iris has 100 channel licenses and you sync with an NMX server that provisions 300 channels, the first 100 channels will be enabled for monitoring. You can also delete unwanted channels from the table permanently.

**NOTE:** Iris does not store QoS data for disabled channels.

To enable/disable a channel:
1. Go to the **Options > Service Settings > Channels** tab.
2. Check the box in the enable column next to the desired entry, as shown in *Figure 6–2*. Save and Cancel buttons appear at the bottom of the tab.
3. Click Save. After a few moments the icon changes to reflect the status of the channel, hollow circle (disabled) or solid circle (enabled).

**NOTE:** You will see an error dialog if you try to enable more channels than licenses are available.

---

**Figure 6–2: Channels tab**

Creating Channel Groups

You may want to classify certain channels into channel groups, and set a specific target VQAD (average video quality degradation) level for each group.

You can see each group’s performance in relation to its target VQAD in the Monitoring Dashboard.
To set up a channel group, navigate to the **Options > Service Settings** page and select the **Channel Group** tab, as shown in **Figure 6–3**.

**Figure 6–3: Channel Groups Tab**

In this example, there are two channel groups defined. 720p is selected. It has 6 members, shown in the list on the right, and a target VQAD of 3.

For directions on adding, deleting, or changing channel groups, see the online help.

**Monitoring a Channel Group**

To monitor channel group health status, go to the **Monitoring > Dashboard** page. In this page you can select a channel group to see how each of its members is performing in relation to the target VQAD, and get an idea of the make-up of each channel—its codec, availability score, how many audios, and so on.

**Figure 6–4** shows the Monitoring Dashboard page. The channel group **Grp–05** is selected and its five member channels are represented in status boxes showing their health, and performance statistics. The time period being evaluated is the 45 mins Window (see **Setting the Prime Time Window**).
Figure 6–4: Home Dashboard

First, we check the channel health color rating. Channel health is determined from the VQAD score (how the channel is performing in relation to the target for channel group), Channel Availability, and Audio Health.

In Figure 6–4, we see that channels E8200_184-Program 04 and E54K-CH1 were performing normally during the 45 mins period. Their quality and availability levels are within the defined thresholds, so their health rating is green.

E54K-CH1 shows a warning audio health rating of yellow for two audios, and E5000_152-Channel 02 shows a critical health rating of orange, because the VQAD levels exceeded thresholds.

The ABC channel shows a severe health rating of red—its Channel Availability is 0.0. It’s possible that the encoder is not receiving data for that video stream.

We see that there were problems during the 45 mins window, so let’s see if these problems persisted, by checking the status for the Last 15 mins.

Figure 6–5: Home Dashboard – After 15 minutes

In the Last 15 mins, the E8200_184-Program 04 audio performance turned severe (it was normal during the 45 mins period), and the other channel stream problems persisted. You probably want to investigate further. Let’s look at channel E5000_152-Channel 02.
Click the status box for E5000_152-Channel 02 to jump to the Analytics Channel Timeline page and see more information about this channel, as shown in Figure 6–6.

**Figure 6–6: Channel Overview**

In the Channel Overview page you can see all of the specifics for the channel:

- The Channels table shows you the physical address for that channel, so you can verify its source.

- The performance box shows you VQAD and Availability meters—you can set the integration period for the meters to zero in on performance levels over specific time periods. It also shows the audio health, downtime in seconds, and how many audio errors were consecutive. In this example, the downtime for audio stream Audio1 during the 45 mins window was 35 seconds, which earned it a health rating of Severe.

- The Properties box shows all the video and audio properties allowing you to further identify the nature of the channel configuration.

- You can chart any of the individual QoS parameters for this channel, over any period of time. You can create multiple charts plotting different QoS parameters, to compare them.

- The VQAD table shows the VQAD details for the time period displayed in the From and To boxes.

Use this page to examine performance for each stream in the channel, over different time periods. In this way, you can identify and evaluate any problems on this channel.
Creating Reports

Iris can deliver a wide variety of reports that you generate on demand, or schedule to be run on a regular basis or run once. You can schedule reports to be run once, daily, weekly, or monthly.

To generate reports, go to Analytics > Reports. Figure 6–7 shows an example of a Top/Bottom channels report. The report query options are listed on the left side pane. You can set the time period the report covers, and choose the channel (HD-Pool1 in this case). Click Run Now to view the report in the right side pane.

Figure 6–7: Reports

You can generate a report in CSV format. Click the Download CSV link to generate a report. The CSV reports show data values for many of the VQ parameters in tables. For Channel Detail and Pool Detail reports you can select to choose a Simple or Detailed CSV spreadsheet. For a description of each report, see the online help.

To save the report in PDF, click the Print link and select PDF as the file format.
To generate scheduled reports for information that you want to review on a regular basis, go to Analytics > Reports and select a report. Click the Schedule button to set up a regular report generation. See Figure 6–8.

Figure 6–8: Schedule Regular Reports

Figure 6–9 shows the Scheduled Reports page, where you can see the reports that will be generated on a regular basis. It is important that you have a clear description of the report in the Description field for reference on the Scheduled Reports List page. See Figure 6–9.

To delete a report from the schedule, select the row and click Delete from Schedule.

When the reports are generated, an email notification will be sent to the address shown at the bottom of the page. You can set up email notification from this page, as described in Email Alert for Scheduled Reports.

Figure 6–9: Scheduled Reports

For a description of each of the Scheduled Reports, see the online help.
Monitoring Events

Iris tracks three types of events:

- **System Events**—These are physical events, affecting server performance. For example Disk Storage Low or Loss of Data Input.
- **QoS Events**—These events are triggered when the QoS values in the data stream exceed the user-defined thresholds (see *Setting Event Thresholds*).
- **Information Events**—These record the success or failure of sync and discovery events (see *Loading Channel Data*).
- **License Alarms**—These report the license status. (see *Licensing Alarms*).

There are several ways to keep track of the events that are occurring on your Iris server, as described in this section.

The Events page, shown in *Figure 6–10*, shows all the events that are stored in the Iris database, with filter tools to help you find the events you need. In this example, the page shows the current events for all severity types. The channel name and source information shows you exactly which channels triggered the events.

![Figure 6–10: Events](image)

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Critical Events are always shown in the Home Page, as shown in Figure 6–11.

![Critical Events in Home Page](image)

Figure 6–11: Critical Events in Home Page

This alerts you to problems, but you’ll need to look at the Events page (Figure 6–10) to identify the source of the problem.

**TIP:** If you need to view the “Loss of Data Input” information, use the Events option to filter the data and list the events. Type in “Loss of Data” in the Type column to filter for this data.

### Creating Backups

Creating a daily database backup of your Iris server is highly recommended.

The server must be stopped to edit or change the Database Tasks options.

During backup the catalog is compressed, and restore will restore the data from the compressed catalog.

**NOTE:** For a remote backup, the file is first copied to the c:\databasebackup location and then zipped. Next, it is moved to a network location. So, even though you are using a network backup, please ensure that there is still enough disk space available on the Iris file server system.

**To generate a database backup file:**

1. Go to the Options > Management Settings page. The Database Tasks section is in the right-hand panel.

2. You can backup to a Local or Remote location. These options may be selected by clicking the appropriate radio button on the backup pop up page.

3. Select **Backup** to generate a backup of the database file. The file is written to this directory on the Iris server:

   `C:\databasebackup`
NOTE: Backups may take up a lot of space on the local machine. The catalog can potentially be 50 GBs or more.

To restore the server database from the last backup file, select **Restore**.

The **Clear DB** button will delete all data and user-defined settings in the database. There is no undo for **Clear DB**—be sure you make a backup before you choose this option.

**What's Next**

Your Iris server is successfully monitoring Qos data and giving you feedback. You have seen some of the monitoring tasks, and how to identify problems. You know where to generate reports and to monitor events.

Now, you can configure the display of data in ways that will help you analyze and improve your video delivery system.
Harmonic Global Service and Support has many Technical Assistance Centers (TAC) located globally, but virtually co-located where our customers can obtain technical assistance or request on-site visits from the Regional Field Service Management team. The TAC operates a Follow-The-Sun support model to provide Global Technical Support anytime, anywhere, through a single case management and virtual telephone system. Depending on time of day, anywhere in the world, we will receive and address your calls or emails in one of our global support centers. The Follow-the-Sun model greatly benefits our customers by providing continuous problem resolution and escalation of issues around the clock.

Table A–1: For Distribution and Delivery (Legacy Harmonic) Products

<table>
<thead>
<tr>
<th>Region</th>
<th>Telephone Technical Support</th>
<th>E-mail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Americas</td>
<td>888.673.4896 or 408.490.6477</td>
<td><a href="mailto:support@harmonicinc.com">support@harmonicinc.com</a></td>
</tr>
<tr>
<td>EME</td>
<td>+44.1252.555.450</td>
<td><a href="mailto:support.emea@harmonicinc.com">support.emea@harmonicinc.com</a></td>
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<tr>
<td>Asia Pacific – Other Territories</td>
<td>+852.3713.9300</td>
<td><a href="mailto:hongkongtechsupport@harmonicinc.com">hongkongtechsupport@harmonicinc.com</a></td>
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<tr>
<td>India</td>
<td>+44.1252.555.450</td>
<td><a href="mailto:support.emea@harmonicinc.com">support.emea@harmonicinc.com</a></td>
</tr>
<tr>
<td>Russia</td>
<td>+7.495.926.4608</td>
<td><a href="mailto:rusupport@harmonicinc.com">rusupport@harmonicinc.com</a></td>
</tr>
<tr>
<td>Africa</td>
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<td><a href="mailto:support.emea@harmonicinc.com">support.emea@harmonicinc.com</a></td>
</tr>
<tr>
<td>Mainland China</td>
<td>+86.10.8391.3313</td>
<td><a href="mailto:chinatechsupport@harmonicinc.com">chinatechsupport@harmonicinc.com</a></td>
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Table A–2: For Production and Playout (Legacy Omneon and Rhozet) Products

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<td><a href="mailto:omneon.support@harmonicinc.com">omneon.support@harmonicinc.com</a></td>
</tr>
<tr>
<td>EMEA</td>
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<td><a href="mailto:omneonemeasupport@harmonicinc.com">omneonemeasupport@harmonicinc.com</a></td>
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<tr>
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<td><a href="mailto:apacsupport@harmonicinc.com">apacsupport@harmonicinc.com</a></td>
</tr>
<tr>
<td>Japan</td>
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<td><a href="mailto:japansupport@harmonicinc.com">japansupport@harmonicinc.com</a></td>
</tr>
<tr>
<td>China - Mainland</td>
<td>+86.10.8391.3313</td>
<td><a href="mailto:chinasupport@harmonicinc.com">chinasupport@harmonicinc.com</a></td>
</tr>
<tr>
<td>Russia and CIS</td>
<td>+7.495.926.4608</td>
<td><a href="mailto:rusupport@harmonicinc.com">rusupport@harmonicinc.com</a></td>
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</table>
The Harmonic Inc. support website is:

http://www.harmonicinc.com/content/technical-support

The Harmonic Inc. Distribution and Delivery product software downloads site is:
ftp://ftp.harmonicinc.com

The Harmonic Inc. Playout and Production software downloads site is:

The Harmonic Inc. corporate address is:
Harmonic Inc.
4300 North First St.
San Jose, CA 95134, U.S.A.
Attn: Customer Support

The corporate telephone numbers for Harmonic Inc. are:
Tel. 1.800.788.1330 (from the U.S. and Canada)
Tel. +1.408.542.2500 (outside the U.S. and Canada)
Fax.+1.408.542.2511
## User Account Permissions

Two types of user accounts can be created for access to the Iris server:

- Administrator — full administrative and monitoring capabilities
- Monitor — Monitoring capabilities

*Table B–1* shows the access level necessary for each feature in Iris.

### Table B–1: User Privileges Required for Feature Access

<table>
<thead>
<tr>
<th>Feature Page</th>
<th>Monitor</th>
<th>Administrator</th>
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<tbody>
<tr>
<td>Home</td>
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</tr>
<tr>
<td>Monitoring &gt; Dashboard</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Monitoring &gt; Real Time Channel View</td>
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<td>X</td>
</tr>
<tr>
<td>Monitoring &gt; Real Time Pool View</td>
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<td>X</td>
</tr>
<tr>
<td>Monitoring &gt; Events</td>
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<td>X</td>
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<td>Analytics &gt; Channel Timeline</td>
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<td>X</td>
</tr>
<tr>
<td>Analytics &gt; Pools Timeline</td>
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<td>Analytics &gt; Reports</td>
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<td>Options &gt; Management Settings</td>
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<td>Options &gt; Service Settings</td>
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<td>X</td>
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<tr>
<td>Options &gt; Data Import/Export</td>
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<td>X</td>
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<td>Options &gt; Report Scheduler</td>
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